



# Iodised Salt

## Less sodium, more iodine, and other things brands claim

Iodised salt is common edible salt to which a very small quantity of an iodine compound has been added. Iodised salt is used to prevent a health problem now known as iodine deficiency disorder (IDD). Iodine is a natural element that is essential to human life. Some of the most vital functions of the human body – such as proper development of brain and body and maintenance of body temperature – depend upon a steady supply of iodine. With regard to India, regulations require the iodine content to be not less than a certain amount in food-grade iodised salt. The techniques for iodisation are simple and well established. The added iodine does not affect the appearance or taste of salt, which happens to be one of the oldest, most ubiquitous food seasonings in the world. However, as the results of *Consumer Voice's* tests on 14 brands of iodised salt show, adherence to the national standards on quality and acceptability parameters is not uniform. As is mostly the case, the tests threw up mixed results. For instance, while two ISI-marked brands failed to meet the requirement for moisture, two proprietary brands did not match up to their claims for less sodium. The detailed findings and analysis follow.

*A Consumer Voice Report*

**A**s per our standard procedure, we undertook market research to identify the popular and regular-selling brands of iodised salt across the country. All the brands selected for testing were evaluated and graded as per their overall performance

The samples were tested as per FSS Regulations and relevant voluntary Indian Standards IS: 7224: 1986 and IS: 16232-2014 for iron-fortified salt as applicable. The testing was conducted at an NABL-accredited laboratory.

based on the comprehensive laboratory results. The grading has been done based on the international grading system.

Two brands, Saffola (Less Sodium) and Tata Salt Lite (Low Sodium), claim to be proprietary – this means FSS Regulations and relevant Indian Standards are not applicable. There are no specifications for low-sodium salt in the national standards.

The key parameters for which the samples were tested included sodium and iodine content, water-insoluble matter, moisture, alkalinity and particle size. We also conducted tests for presence of heavy metals (lead and arsenic).

Low-sodium salt is a specially formulated salt that provides lower sodium than ordinary salt by partial replacement of sodium chloride with potassium, magnesium and calcium compounds. It is generally consumed by people with symptoms of hypertension and high blood pressure.



### The 'Iodine' in Salt

Iodine is a trace mineral that makes thyroid hormones, which are essential for normal growth and development of human body. About 70–80 per cent of iodine is found in the thyroid gland in the neck and the rest is distributed throughout the body, particularly in the muscles and blood.

If our body does not have enough iodine, hypothyroidism – low thyroid hormone levels – can develop. Symptoms of hypothyroidism include sluggishness or fatigue, weight gain, dry skin, and sensitivity to temperature changes. In infants and children, hypothyroidism can affect physical and mental development. Some people with hypothyroidism develop an extremely large thyroid, known as goitre.

Deficiency of iodine can cause diseases like mental retardation, goitre and cretinism. In fact, without enough iodine a newborn's brain and body can become permanently retarded and stunted. Iodine is vitally needed during early childhood, puberty, pregnancy and lactation. A woman who is deficient in iodine is likely to produce an abnormal child. If left untreated, the child's mental and physical condition worsens as s/he grows older.

### Too Much Salt?

Being the main source of sodium, a small amount of salt is important for good health. It helps in maintaining the correct volume of circulating blood and tissue fluids in the body. But when consumed in large amounts, salt makes this 'correct volume' its first victim. When the salt levels are too high in the body, kidneys cannot keep up and let salt enter one's bloodstream and creates hypertension in the body. Too much salt in the blood also causes water retention as salt draws more water into the blood. This further raises the blood pressure.

World Health Organization (WHO) recommends less than five grams (about one teaspoon) of salt per person per day. Remember that many processed and convenience foods, preserved foods, and sun-dried foods as well as canned foods contribute to higher intakes of salt.

## Comparative Test

### Recommended Amounts

Iodised salt has proven to be the most effective means of providing one with consistent levels of iodine capable of eliminating these diseases.

The recommended amount is 150 mcg/day for adults, 200 mcg for pregnant or lactating women, and lower amounts for children. These recommendations stem from consensus statements by several groups, including the International Council for Control of Iodine Deficiency Disorders (ICCIDD), the World Health Organization (WHO), UNICEF, and the Food and Nutrition Board of the US National Academy of Sciences.

### Double-Fortified Salt (Iron- and Iodine-Fortified)

Double-fortified salt (DFS) is an innovative new fortified food product delivering small but crucial amounts of iodine and iron to human beings through their diet. Dual fortification of salt with iodine and iron could be a sustainable approach to combat iodine and iron deficiencies. India's National Institute of Nutrition (NIN) has pioneered the development of double-fortified salt. NIN has also taken the initiative to transfer the technology to iodised salt manufacturers in the country and provides continuous quality-control support.

## BRANDS

Rank	Total Score out of 100 (Rounded off)	Brand	Claim	
<b>Refined/Vacuum-Evaporated Iodised Salt</b>				
1	90	Tata	Vacuum-evap.	
2	89	Nirma Shudh	Vacuum-evap.	
3	87	Taal	Refined ISI mark	
4	86	Aashirvaad	Refined	
5	85	Ankur Gold	Refined ISI mark	
6	83	Patanjali	Refined ISI mark	
7	76	Tata I-Shakti	Refined	
8	65	Fresh & Pure	Refined ISI mark	
<b>Iodised Salt</b>				
1	92	Catch	Table salt	
2	89	Spencer's		
3	77	Reliance Select		
<b>Iodised and Low Sodium</b>				
1	83	Saffola (Less Sodium)	Less sodium	
2	75	Tata Salt Lite (Low Sodium)	Low sodium	
<b>Double Fortified</b>				
		Tata Salt Plus (Iron + Iodine)	Iron-fortified	

## CV RECOMMENDATIONS | TOP PERFORMERS

Refined/Vacuum-Evaporated Iodised Salt

**Tata**

**Iodised Salt**

**Catch**

**Iodised and Low Sodium**

**Saffola (Less Sodium)**

**VALUE FOR MONEY**

**Nirma**



## TESTED

	MRP (Rs)	Net Weight (kg)	Best before (months)	Manufactured/Marketed by
	18	1	24	Tata Chemicals Ltd
	28	2	24	Nirma Ltd
	18	1	24	Divine Chemfood
	17	1	12	ITC Ltd
	20	1	24	Ankur Chemfood Ltd
	12	1	24	Patanjali Ayurved Ltd
	14	1	24	Tata Chemicals Ltd
	17	1	24	Future Consumer Enterprise Ltd
	25	0.200	24	DS Spice Co. Pvt. Ltd
	16	1	12	Spencer's Retail Ltd
	18	1	12	Reliance Retail Ltd
	31	1	12	Marico Ltd
	32	1	24	Tata Chemicals Ltd
	25	1	12	Tata Chemicals Ltd

### Key Findings

- In the refined iodised salt category, sodium/sodium chloride was found highest in Tata and Nirma. ISI-marked brand Fresh & Pure did not meet the requirement for sodium/sodium chloride.
- Proprietary brands Saffola Less Sodium and Tata Low Sodium were found not meeting their claims for sodium. Saffola had 36.77 per cent against their claim of 35.3 per cent, and Tata Low Sodium had 37.38 per cent against the claimed 33.2 per cent – thus, their claim for less sodium is not true.
- In the refined category, iodine was found highest in Tata and Tata I-Shakti. A higher amount of iodine is good for consumers.
- Refined iodised salts Fresh& Pure and Patanjali failed to meet the requirement for moisture specified in Indian Standard even though they are both ISI-marked. Brands Tata I-Shakti and Tata Salt also did not meet this requirement as per Indian Standard.
- ISI-marked brands Ankur Gold and Fresh & Pure failed to meet the requirement for matter soluble in water other than sodium chloride. Tata I-Shakti also did not meet this requirement.
- Tata Salt Plus (double-fortified) was found to have slightly less iodine (14.83 ppm) against the requirement of 15 ppm. This brand also failed to meet the requirement for iron as per FSS Regulations and IS: 16232.

### TEST RESULTS

#### FOR PHYSICOCHEMICAL PARAMETERS

**Sodium/Sodium Chloride | Iodine | Matter Soluble in Water other than NaCl | Water-Insoluble Matter | Moisture | Alkalinity | Physical Observation | Particle Size | Calcium | Magnesium | Sulphate | Lead | Arsenic**

#### ◆ Sodium/Sodium Chloride

The minimum requirement for sodium chloride is 97 per cent.

- *ISI-marked brand Fresh & Pure did not meet the requirement. Tata I-Shakti and Reliance were very close to the minimum requirement. All other brands met the requirement. In the refined category, Tata and Nirma met the requirement fully and hence scored highest.*
- *The proprietary brands Saffola Less Sodium and Tata Low Sodium did not meet their claims for sodium. Saffola Less Sodium had 36.77 per cent sodium against their claim of 35.3 per cent. Tata Low Sodium had 37.38 per cent sodium against the claimed 33.2 per cent.*

#### ◆ Iodine (on Dry Basis)

The mandatory requirement for iodine content in salt is not less than 15 parts per million (ppm) at

retail/consumer level and 30 ppm at manufacture level.

- *All the brands except Tata Salt Plus (double-fortified) were found with iodine content well above the standard requirement of 15 ppm at retail level. The iodine content in Tata Salt Plus was slightly less at 14.83 ppm.*
- *In the refined category, iodine was found highest in Tata and Tata I-Shakti. A higher amount of iodine is good for consumers.*

#### ◆ Matter Soluble in Water other than Sodium Chloride (NaCl)

FSS Regulations have specified the requirement as not more than 3.0 per cent for iodised salts and 2.5 per cent for fortified salts. As per Indian Standard, the limits are 3 per cent for iodised salt and 1 per cent for refined and vacuum-evaporated salt.

- *In the refined category, Nirma and Tata scored highest on this parameter.*
- *ISI-marked brands Ankur Gold and Fresh & Pure failed to meet the requirement. Tata I-Shakti (refined iodised salt) also did not meet this requirement.*

#### ◆ Water-Insoluble Matter (on dry basis)

Water-insoluble matter refers to mineral salts contained in salt and solid brine (water-insoluble

impurity). Water-insoluble matter is also known as insoluble residual material. FSS Regulations and Indian Standard require that water-insoluble matter in salt is not more than 1.0 per cent by weight on dry basis.

- Highest amount of water-insoluble matter was found in Saffola Less Sodium (1.14 per cent). However, it being a proprietary brand, the requirements set by the law are not applicable.
- All other brands were found well within the specified limit.
- Spencer was found to have the lowest amount of insoluble matter.

### ◆ Moisture

Moisture generally refers to the presence of water in a product. It may be noted that less amount of moisture is better as it translates into a longer shelf life for the product. As per FSS Regulations, moisture content shall not be more than 6 per cent in iodised salt and not more than 1.5 per cent in double-fortified salt. As per Indian Standard, maximum moisture content is 6 per cent for iodised salt and 0.5 per cent for refined and vacuum-evaporated salts.

- Fresh & Pure and Patanjali, both ISI-marked brands, failed to meet the IS requirement for moisture (a maximum 0.5 per cent for refined and vacuum-evaporated salts). Tata I-Shakti and Tata also did not meet the IS requirement.
- In refined category, the lowest moisture content was found in Taal (0.03 per cent).
- Moisture content in all other brands was within the specified limit.

### ◆ Alkalinity (as Na<sub>2</sub>CO<sub>3</sub>) on Dry Basis

The maximum permissible alkalinity is 0.15 per cent.

- All the brands were well within the specified limit.

### ◆ Physical Observation

The salt shall be free from visible contamination with clay, grit or other extraneous adulterants or impurities.

- All brands cleared the test.

### ◆ Particle Size on 1,000-Micron Sieve

As per Indian Standard, a minimum 95 per cent (by mass) of the material shall pass through a 1,000-micron sieve. Also, not more than 10 per cent (by mass) shall pass through a 150-micron IS sieve.



- All the brands were well within the specified limit.

### ◆ Calcium (as Ca) on Dry Basis

The Indian Standard has set the maximum permissible limit for calcium in refined and vacuum-evaporated salt at 0.15 per cent.

- All the brands were well below the specified limit.

### ◆ Magnesium

As per Indian Standard, the maximum limit for magnesium is 0.10 per cent in refined and vacuum-evaporated salt. FSS Regulations have set the same requirement for double-fortified salt.

- All brands except Tata showed results within the specified limit.

### ◆ Sulphate

For sulphate, the Indian Standard has specified the maximum permissible limit as 0.60 per cent for refined and vacuum-evaporated salt, and 1.1 per cent for double-fortified salt.

- All the brands were within the specified limit.

### ◆ Lead

The limit is a maximum 2.5 ppm.

- All the brands were well within the specified limit.

### ◆ Arsenic

The limit is a maximum 1.1 ppm.

- All the brands were within the specified limit.

Parameter ↓	Weightage	Refined/Vacuum-Evaporated Iodised Salt							
		Tata	Nirma	Taal	Aashirvaad	Ankur Gold	Patanjali	Tata I-Shakti	Fresh & Pure
Sodium/Sodium chloride	20	19.7	19.38	17.8	18.78	17.76	18	13	6.0
Iodine	20	19.89	17.64	15.73	17.90	18.03	17.93	19.0	14.93
Matter soluble in water other than NaCl	8	7.1	7.26	5.92	5.92	1.6	5.97	1.6	1.6
Water-insoluble matter	7	7.0	7.0	6.97	7.0	7.0	6.79	7.00	7.0
Moisture	7	2.87	4.06	7.0	3.5	5.53	2.31	2.82	2.17
Alkalinity	6	4.87	5.37	4.2	4.92	4.92	4.56	4.56	5.46
Physical observation	5	5	5	5	5	5	5	5	5
Particle size	4	4	4	3.94	4	3.31	3.91	3.82	3.99
Calcium	3	2.82	2.01	2.91	2.1	2.64	1.74	1.83	2.01
Magnesium	3	1.26	1.92	2.88	2.52	2.52	2.16	2.4	1.92
Sulphate	3	2.7	2.82	1.83	2.19	2.79	1.89	2.46	1.98
Lead	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Arsenic	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
<b>Sub-total</b>	<b>91</b>	<b>82.21</b>	<b>81.46</b>	<b>79.18</b>	<b>78.83</b>	<b>76.1</b>	<b>75.26</b>	<b>68.49</b>	<b>57.06</b>

\*Dispenser table salt

### FOR GENERAL QUALITIES

#### ◆ Packing

The material should be packed in polyethylene or high-density polyethylene (HDPE) bags.

- Except for Catch, packing of all brands was of flexible plastic material. Grading was assigned for packing as per the quality and thickness of the polypack.
- Catch was packed in a hard cardboard cylindrical box.

#### ◆ Marking

The samples of iodised salts were verified against the marking requirements as per the relevant Indian Standard. The pack shall be legibly and clearly marked with the following particulars:

- Name and type of product
- Name and address of manufacturer
- Batch or code number
- Iodising agent used
- Iodine content when packed and at retail level

f) Date of manufacturing (month and year)

g) 'Best before' date

h) Net weight

i) Green dot (for vegetarian status)

j) MRP

k) Instructions for storage

l) FSSAI license number

m) Customer-care details

- All brands provided the required information.
- Four brands – Ankur, Fresh & Pure, Patanjali and Taal – were ISI-marked.

#### ◆ Net Weight

Samples from all brands were verified for net weight as per the quantity claimed. The net weight should be within the tolerance limit permitted in Legal Metrology Rules.

- Net weight of all the tested brands was found to be above the declared quantity.

**SCORES**

	Iodised Salt			Iodised and Low Sodium	
	Catch (table salt)*	Spencer's	Reliance Select	Saffola (Less Sodium)	Tata (Low Sodium)
	18.38	18.42	13.60	12.00	6
	18.03	15.80	14.17	20.0	14.36
	7.65	7.05	1.6	NA	NA
	4.73	7.0	7.0	3.36-	6.48-
	6.90	6.79	6.85	6.99	6.88
	5.37	4.92	4.92	4.02	5.46
	5	5	5	5	5
	4	3.8	3.77	3.65	3.85
	2.82	2.16	2.46	-	-
	2.76	2.64	2.64	2.76	2.28
	2.77	2.43	2.73	3	2.76
	2.5	2.5	2.5	2.5	2.5
	2.5	2.5	2.5	2.5	2.5
	<b>83.41</b>	<b>81.01</b>	<b>69.74</b>	<b>62.42</b>	<b>51.59</b>





## Comparative Test

Parameter ↓	Weightage	Refined/Vacuum-Evaporated Iodised Salt							
		Tata	Nirma	Taal	Aashirvaad	Ankur Gold	Patanjali	Tata I-Shakti	Fresh & Pure
Packing	3	2.5	2.5	2	2	3	2	2.5	2
Marking	3	2.5	2.5	3	2.5	3	3	2.5	3
Net weight	3	3	3	3	3	3	3	3	3

### Manufacturers' Comments

As a matter of policy, before publication, the test results of the brands are shared with their respective

manufacturers/marketers inviting their views/comments. We reproduce here the comments of manufacturers as well as our reply:

Manufacturer (Brand Name)	Manufacturer's Comment	VOICE Society's Reply
<b>Tata I-Shakti</b>	We are consistently meeting the standards and as per our tests, NaCl is above 98 per cent and not 96.8 per cent as mentioned in your report	The NABL lab has rechecked and confirmed the test result reported earlier.
<b>Tata Salt Lite</b>	Sodium content in Tata Salt Lite is in the range of 33.25%+/-0.2% for samples tested at our lab, and third-party NABL-certified labs have consistently corroborated this result.	The NABL lab has rechecked and confirmed the test result reported earlier (37.38 per cent).
<b>Tata Salt Plus</b>	a) Test report submitted by you show iron content as (Fe) 555.74 ppm against FSSAI and Tata Chemicals standard of 850–100 ppm; samples tested at our lab and third party NABL-certified labs have consistently corroborated this result. b) Iodine content shown by you in your report is 14.55 ppm, whereas we maintain the FSSAI parameter of having greater than 15 ppm of iodine at distribution channel, including the retail level; this is again well above the standard in all the tests done at our lab and third-party NABL-certified labs. Indian Standard IS: 16232-2014 relating to iron-fortified iodised salt is to be used in the case of Tata Salt Plus.	The NABL lab has rechecked as per IS: 16232-2014 and reported the retest result as follows: Iodine content 14.83 mg/kg and iron 674.77mg/kg
<b>Nirma</b>	a) The calcium percentage as shown in your test results is much higher than our lab results and therefore this has to be re-tested. b) We request you to do re-sampling of our product for fresh testing. We also request you to send us your analysis method.	The NABL lab has reconfirmed the test results reported earlier (0.11 per cent). The test procedure followed by lab is as per Annex F of IS: 7224:2006. Regarding your request for re-sampling, note that we are presently at the end of the evaluation process and it may not be possible for us to start sampling and testing at an outside lab again. However, we are reproducing your comment on calcium in our published report.

	Iodised Salt			Iodised & Low Sodium	
	Catch (table salt)*	Spencer's	Reliance Select	Saffola (Low Sodium)	Tata (Less Sodium)
	3	2.5	2	3	3
	2.5	2.5	2.5	2.5	2.5
	3	3	3	3	3

<b>Saffola</b>	<p>a) Saffola Salt Plus is a proprietary product and a lower-sodium salt; it has potassium chloride (KCL) in it.</p> <p>b) So, test for 'matter soluble in water other than NaCl, on dry basis %' is not applicable to us. Our product has both NaCL and KCL and thus will not meet the level of a standard product.</p> <p>c) Please remove the said test from table.</p>	<p>We have removed the test result for matter soluble in water other than NaCl from the table for the category 'iodised salt (low sodium)'.</p>
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### Adjusting to Lower-Salt Foods

Reducing the amount of salt in food (without the use of salty-tasting substitutes) is advisable, although it can take a while to get used to since foods will initially taste bland. However, within two or three weeks you will become accustomed to the taste of lower-salt foods. During this time the salt-taste receptors in the mouth become much more sensitive to salt and you will begin to detect a salty taste in anything that you previously ate. Using other sources of flavour, such as herbs, spices, black pepper, vinegar, lemon juice and chilli can improve the taste of food to make the transition even easier for you. Once the salt-taste receptors have adjusted, you will find that high-salt foods taste unpleasant. The same applies to fatty and sugary foods.



*Dear readers: We are open to hearing your suggestions on products and services that you believe should be reviewed/tested by Team Consumer Voice. You may write to [editorial@consumer-voice.org](mailto:editorial@consumer-voice.org)*